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PTO/SB/33 (07-06)

**PRE-APPEAL BRIEF REQUEST FOR REVIEW**

Docket Number (Optional)

SCS-550-508

Application Number

10/756,762

Filed

January 14, 2004

First Named Inventor

GILKERSON

Art Unit

2181

Examiner

V. Lai

Applicant requests review of the final rejection in the above-identified application. No amendments are being filed with this request.

This request is being filed with a notice of appeal.

The review is requested for the reason(s) stated on the attached sheet(s).  
Note: No more than five (5) pages may be provided.

I am the

☐ Applicant/Inventor

☐ Assignee of record of the entire interest. See 37 C.F.R. § 3.71. Statement under 37 C.F.R. § 3.73(b) is enclosed. (Form PTO/SB/96)

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Requester's telephone number

February 15, 2007

Date

NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below.\*

☒ \*Total of 1 form/s are submitted.

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**STATEMENT OF ARGUMENTS IN SUPPORT OF  
PRE-APPEAL BRIEF REQUEST FOR REVIEW**

The Examiner's entry of the previously filed Rule 116 amendment is appreciated. This amendment amended all claims to be dependent upon independent claims 19 & 20 which positively recite "conditional procedure returns." The Court of Appeals for the Federal Circuit has noted in the case of *Lindemann Maschinenfabrik GMBH v. American Hoist & Derrick*, 221 USPQ 481, 485 (Fed. Cir. 1984) that "[a]nticipation requires the presence in a single prior art reference disclosure of each and every element of the claimed invention, arranged as in the claim." Claims 2-9 and 11-20 stand rejected under 35 USC §102 as anticipated by McMahan (U.S. Patent 5,692,168) even though the statutory basis is not set out in the final rejection, the Examiner confirmed this in a telephone interview of February 14, 2007.

**Error #1 – The cited McMahan fails to teach the claimed "prefetch unit"**

The final paragraph of Applicant's independent claim 19 specifies "the prefetch unit for determining, as the fetch address, an address obtained from the return stack." This is specifically where "the prefetched instruction is a first type of instruction flow changing instruction and is **conditional**" (emphasis added). The McMahan reference defines "returns" (the alleged teaching of an "instruction flow changing instruction") as being **non-conditional** and, as will be seen, specifically illustrates that retrieval of return addresses from the return stack is performed as a bookkeeping measure to improve the performance of a target cache and is unrelated to any conditional branching as required by the present claims.

McMahan discloses a system wherein a prefetch unit includes a flow control for controlling the transfer of instruction bytes from a prefetch buffer to a decoder and is particularly concerned with using flow control bits to identify changes of flow (COFs) in the code stream. Instruction bytes gathered in a prefetch buffer are only transferred to the decoder of an execution unit when the flow control bits indicate a change of flow, if the predicted change of flow instruction is confirmed as having been decoded (see the McMahan abstract).

**Error #2 – the cited McMahan reference fails to teach a “return address stack” which is “accessible by the prefetch unit”**

While the Examiner correctly notes that McMahan does disclose a return address stack, this is used for a completely different purpose (and is not connected as per applicant's claim), i.e., where a target address will be wrong and the needed R2 is popped from the return address stack and is taken instead of R1. Applicant does not believe it necessary to conduct a detailed discussion of why the McMahan reference utilizes the return address stack 132. It is only incumbent upon Applicant to establish that McMahan requires that procedure returns be **unconditional** (as is demonstrated above) which is the direct opposite of Applicant's claimed **conditional** procedure return which, if predicted to be taken, causes an address to be popped from the return stack.

Thus, the claimed requirement that the prefetched instruction is a COF instruction and "is conditional" is the direct opposite of the teachings of McMahan's requirement that defines the returns as "non-conditional." Thus, McMahan cannot render obvious the subject matter of Applicant's claim 1, let alone anticipate the claimed subject matter. As

a result, any further rejection of claims 1-18 over the McMahan reference is respectfully traversed.

**Error #3 – The cited McMahan reference actually teaches away from the “conditional return” claimed in the independent claims 19 and 20**

It should be noted that McMahan specifically identifies returns as being **unconditional** change of flow (UCOF) instructions ("branch processing unit 40 provides target prefetch addresses for predicted taken branches (including loops) and **unconditional** change of flow (UCOF) instructions (jumps, calls, **returns**) . . . " (emphasis added) (column 10, lines 57-60). This is further confirmed by McMahan's further statement that "COF instructions are either . . . or (b) '**unconditional** COFs or UCOFs' which are jumps, calls, **returns**" (emphasis added) (column 12, lines 27-30)).

As noted above, the claimed invention is concerned with providing a return stack onto which an address corresponding to the return from a procedure call is pushed when such a procedure call is predicted as taken (see page 15, lines 14-17 and step 425 of Figure 4B). Thereafter, if a conditional procedure return is predicted to be taken, an address is popped from the return stack (as discussed on page 14, lines 14-31 and step 335 of Figure 4A). Because McMahan, as noted above, specifically requires that procedure returns ("returns") are **unconditional**, there would be no reason for McMahan to predict whether a procedure return would be taken, as they are **always**, i.e., "unconditionally" taken.

McMahan's teaching would clearly lead one of ordinary skill in the art away from the invention of claims 19 & 20 and claims dependent thereon.

**Error #4 – McMahan teaches away from the claimed conditional procedure returns**

Applicant notes that beginning on page 11 of the final rejection, the Examiner addresses claims 19 and 20 and that this discussion of claim 19 is virtually identical to the discussion of claim 1 except for the paragraph bridging pages 12 and 13 which is directed to the last three lines of claim 19. Similarly, the discussion of claim 20 is identical to the discussion of method claim 10 except for the last paragraph on page 14 (immediately before "Conclusion") which is directed to the last three lines of claim 20. To the extent the rejection of claims 19 and 20 is a verbatim copy of the previously noted rejection of claims 1 and 10, Applicant incorporates the discussion of the rejection of claims 1 and 10 under §102 as set out in the Amendment filed July 31, 2006 beginning at page 14 and this discussion is incorporated by reference.

Applicant will note that the distinction between the McMahan reference as defining returns of a "flow changing instruction" as being non-conditional and this was previously noted on page 14 in the Remarks portion of the previously submitted Amendment. Claims 19 and 20, as noted above, specifically state that the "first type of instruction flow changing instruction is a conditional procedure return instruction," thereby clearing distinguishing the McMahan reference from Applicant's independent claims 19 and 20.

As the Examiner will appreciate, because McMahan specifically identifies returns as being unconditional, it will be readily apparent that there would be no need for the method and apparatus of Applicant's claims which are limited to "conditional procedure return instructions." Quite clearly, in the McMahan case, if the return instructions are unconditional (as taught by McMahan), then no prediction needs to be made as to

whether they will be executed and, accordingly, the currently claimed invention would not be needed.

As noted in the previously filed Amendment and, as further discussed above, McMahan simply does not anticipate or render obvious the subject matter of independent claims 19 and 20 or claims dependent thereon. Accordingly, remaining claims 2-9 and 11-20 are believed to be clearly patentable over the McMahan reference and any further rejection thereunder is respectfully traversed.

### Summary of the Arguments

The Examiner has failed to identify where the McMahan reference teaches the claimed "prefetch unit" for determining a fetch address for a "conditional procedure return instruction," i.e., no required "disclosure of each and every element." The Examiner has failed to identify where the McMahan reference teaches the interrelationship between the prefetch unit and the "return address stack," i.e., no required disclosure of elements "arranged as in the claim." In fact, the McMahan's teaching unconditional change of flow instructions would lead one of ordinary skill in the art away from the claimed "conditional procedure return."

As a result of the above, there is simply no support for the rejection of Applicant's independent claims 19 & 20 or claims 2-9 and 11-18 dependent thereon under 35 USC §102 or §103. Applicant respectfully requests that the Pre-Appeal Panel find that the application is allowed on the existing claims and that prosecution on the merits should be closed.